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ABSTRACT

The nature of activities in which institutional researchers are involved in different institutional and organizational settings was studied. In order to characterize the practice of institutional research in various institutional settings, a taxonomy of institutional research activity areas was developed. A 114-item taxonomy was developed that was divided into 13 categories. The taxonomy was incorporated into the Professional Development Needs Assessment Survey (PDNAS). For each item, respondents were asked to indicate whether the activity was one in which they or their office had performed in the past 2 years. In the spring of 1981, the PDNAS was mailed to all members of the Association of Institutional Research. Approximately 40 percent of the members (701 persons) completed the survey, and the database for this survey consisted of 295 responses. Factor analysis was used to validate a 92-item taxonomy of institutional research activities. Through discriminant analyses, the study provides an operational definition of institutional research as it is practiced in institutional and organizational settings that vary according to institutional type, offices to whom institutional research offices report, time period in which institutional research offices were established, and full-time-equivalent size of institutional research staff. The results further suggest that the activities may be a function of the diversity and level of sophistication of the research staff. Possible future directions for institutional research are noted. A bibliography is appended. (SW)

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The Practice of Institutional Research:

Toward an Operational Definition

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This paper was presented at the Twenty-Second Annual Forum of the Association for Institutional Research held at the Denver Hilton Hotel in Denver, Colorado, May 16-19, 1982. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum papers.

D. R. Coleman, Chairman
Forum Publication
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ABSTRACT

This study is based on responses to the 1981 AIR Professional Development Needs Assessment Survey of persons employed in 295 offices of institutional research, institutional analysis, or institutional studies. Factor analysis was utilized in validating a 92 item taxonomy of institutional research activities. Through discriminant analyses, the study provides an operational definition of institutional research as it is practiced in institutional and organizational settings which vary according to (1) institutional type; (2) offices to whom institutional research offices report; (3) time period in which institutional research offices were established; and (4) FTE size of institutional research staff.

In a generic sense, institutional research is concerned with the study of the operations, environments, and processes of institutions of higher education (Sheehan and Torrence, 1977). Formal definitions of institutional research, however, have been accused of being "breathtakingly eclectic, embracing virtually every problem institutions have faced since the rise of the medieval university" (Rourke and Brooks, 1966, p. 53).

Suslow (1972, p. 13) has noted "The name institutional research has neither euphony nor clarity...the name suffers not so much from lack of desirable characteristics as it does from lack of recognition." Indeed, the lack of agreement of what constitutes the practice of institutional research is implicit in the varied definitions offered by persons prominent in the field (Brumbaugh, 1960; Dressel, 1971; Jedamus and Peterson, 1980; Saupe, 1981). One explanation for discrepancies in the definition of institutional research, noted by Saupe (1981), may be that the functions of institutional research offices are dependent upon the institution's planning, decision-making, policy formulation and organizational structures.

In tracing the evolutionary nature of institutional research, various researchers (Stecklein, 1966; Hull, 1968; and Tetlow, 1979) have noted that the earlier emphases upon institutional self-study and evaluation dominant in the 1950s were partially augmented by an increased emphasis upon analytical techniques in the 1960s. With growth as the dominant characteristic of higher education in the 1960s, Wallhaus (1979) noted that enrollment projections and demographic analyses captured a significant portion of institutional researchers' energies during this period. Similarly, Gulko (1978, p. 17) noted:

> "Fifteen years ago, we were concerned with data definitions, simple analytic structures, and elementary statistical procedures for enrollment forecasting. Today, we are concerned with topics such as resource allocation, computer-based systems, educational outcomes, and international cooperation. In short, the practice of institutional research has grown in terms of complexity, in terms of required education and skills, and in terms of stature within the higher education community."

In the 1970s, emphasis upon the development of analytic tools for planning and management, including the use of simulation models and student flow models, reflected the multidimensional roles of institutional research. In the 1980s it is probable that there will be greater emphasis on market research and increased attention upon defining and integrating the relationships between institutional research and planning (Spencer, 1979; Millett, 1980; Jedamus and Peterson, 1980). Brown and Yeager (1977) have projected that planning support activities are likely to comprise the final function that institutional research offices will be expected to perform.

In predicting the content, focus and methodology of institutional research in the 1980s, Peterson (1979) suggested that institutional planning would come to focus upon such areas as environmental scanning, values assessment, self-assessment, needs assessment, and strategic assessment. Program evaluation, reduction/closure, concern for quality, faculty and staff vitality, and minority issues were also seen as areas of primary future emphasis.

Although various studies have investigated the characteristics of early members of the Association for Institutional Research (Tincher, 1970), institutional research offices (Pieper, 1971) or information sources of value to institutional researchers (Saupe, 1967; Saupe and Montgomery, 1970; and Lyons, 1976), studies indicating variations in the practice of institutional research according to institutional type and other characteristics are rare. Studies by Morstain and Smart (1974) and Fry and Walker (1980) have examined perceived and preferred priorities associated with eight to ten broad categories of institutional research activity as they differed by institutional type. However, neither study develops or utilizes a detailed taxonomy of topics investigated by institutional researchers to analyze the manner in which institutional and organizational characteristics affect the practice of institutional research.

PURPOSE

In view of the rather limited literature base describing the activities which constitute the practice of institutional research, the purpose of this paper is to determine the nature of activities in which institutional researchers are involved in different institutional and organizational settings, thereby providing an operational definition of institutional research.

The study is significant because it (1) develops and validates a comprehensive taxonomy of institutional research activities; (2) provides a detailed operational definition of the activities in which institutional research practitioners are engaged and (3) identifies potential differences in the scope of institutional research activities in various institutional and organizational settings. The findings of this study should be of interest to all institutions considering the establishment or evaluation of institutional research related offices.

INSTRUMENTATION AND DATA SOURCE

In order to characterize the practice of institutional research in various institutional settings, a taxonomy of institutional research activity areas was developed. The taxonomy was based upon an examination of topics in the literature, papers presented at previous state, regional, and national institutional research meetings, a taxonomy of institutional research activities at community/junior colleges (Dubois and Greenberg, 1972), and previous surveys conducted by Association for Institutional Research (AIR) members. From this process, a 114 item taxonomy was developed which was divided into thirteen categories (i.e. Goals, Planning, Budgetary and Financial Analysis including General and Specific Cost/Financial Studies, Computers, Organizational/Administrative Development, Academic Program Planning/Analysis/Review, Curriculum and Instruction, Faculty, Admissions/Enrollment Planning, Student Concerns and Perceptions, Alumni, Facilities, and External Relations.

The taxonomy was incorporated into the Professional Development Needs Assessment Survey (PDNAS). For each item, respondents were asked to indicate whether the activity was one in which they or their office had performed in the past two years. Based upon a pilot-test of the instrument and responses from experienced institutional researchers, certain modifications and improvements in the survey were made. After open-ended responses and items that seemed to represent methods or tools rather than activities (e.g. "Institutional Goals Inventory" or "Costing Methodologies" were excluded from the analyses, 92 PDNAS items remained.

In the Spring of 1981, the PDNAS was mailed to all AIR members. Approximately 40 percent of the members (N=701) completed the survey. The data base for this survey consisted of responses from 334 of the 701 respondents who were employed in offices of institutional research, institutional analysis, or institutional studies. Multiple responses from a given office (e.g. director, associate directors, and/or research associates) were combined into a single response for each office. With the elimination of multiple responses, the number of cases was reduced from 334 to 295.

RESULTS

The results for this study are conveyed in three parts. The first is a description of the characteristics of institutional research offices and their major activities. The second part consists of a validation of the taxonomy using factor analysis. The third part identifies differences in institutional research practice by various characteristics of the institution and institutional research office.

Characteristics

An analysis of the responses from the 295 Institutional Research offices revealed that 15 percent were located in research universities, 13 percent were located in other doctoral granting institutions, and approximately 20 percent

each were located in comprehensive universities, baccalaureate, and two-year institutions as categorized by the Carnegie Council's institutional classification scheme. The median headcount enrollment of the responding institutions was 7,300. Approximately 20 percent of the sample fell within the enrollment ranges of 544-1,999; 2,000-4,999; 5,000-9,999; 10,000-19,999; and more than 20,000 students.

Approximately 25 percent of the offices reported directly to the President/Chancellor. Similar percentages reported to the Vice President/Chancellor for Administration/Planning/Policy Analysis (VPAPPA). The remaining 25 percent reported to a wide variety of offices (e.g., Registrar, Admissions, Student Affairs). The median year in which offices of institutional research were established was 1971. The earliest year in which an office of institutional research was founded was 1911. Slightly less than 25 percent of the offices were established prior to 1968. A similar percentage of offices were founded between 1968-1971, 1972-1975, and 1976-1981.

The number of FTE professional staff in the offices of institutional research ranged from .25 to 21.00 with a median of 2.0 FTE professional staff. Approximately 40 percent of the offices had one or fewer FTE professional staff. An additional 40 percent of the offices had between 1.0 and 3.0 FTE professional staff, while 20 percent of the offices reported more than 3.0 FTE staff.

The major activities of institutional research offices which at least half of the offices indicated was a present or recent activity performed in the past two years are presented in Table 1. As indicated, over two-thirds of the offices were involved in student retention studies, the development of enrollment projections, institutional level planning, fact book development, and credit-hour cost studies. The percent of offices indicating a given area as an activity that they have performed within the last two years, however, was not consistent

Table 1. Percentage of Respondents Indicating an Activity Which Their Office has Performed in the Past Two Years by Type of Institution

	Type of Institution				
	Total	Doctoral Granting	Comprehensive	Baccalaureate	Two-Year
Analyzing student retention/attrition	73%	71%	79%	73%	73%
Developing enrollment projections	71	81	80	63	62
Institutional level planning	68	71	72	61	73
Fact book development	67	73	65	68	64
Instructional program/credit hours/costs	67	69	76	64	68
Institutional self-study/accreditation	66	57	68	71	73
Management information systems	65	73	73	47	62
Meeting external reporting needs	62	66	63	48	67
Follow-up surveys of graduates	61	42	51	71	88
Goal setting	57	42	59	64	68
Faculty workload analyses	57	70	72	44	44
Data base development/management and control	55	60	58	47	50
Analysis of grading trends, policies, grade inflation	53	52	60	49	58
Institutional level self-studies	53	49	48	63	58
Follow-up surveys of non-returning students	53	43	52	41	82
Salaries/fringe benefits cost studies	53	75	58	51	29
Reporting of space utilization and inventory data	53	47	66	47	56
Student perceptions of college environment	52	37	62	64	53
Space Utilization Cost Studies	52	49	66	44	52
Development of Student Credit Hour Projections	52	71	66	25	50

across the various types of institutions. Table 1 shows, for example, that faculty workload and salaries/fringe benefit cost studies were major activities of institutional research offices located in doctoral and comprehensive institutions. However, these activities were performed to a lesser extent in offices located in baccalaureate and two-year institutions. On the other hand, follow-up studies of graduates and non-returning students were a major activity of two-year institutions.

Insert Table 1 About Here

Factor Analysis

To identify underlying constructs in the activities conducted by the institutional research offices, a factor analysis was performed. The responses to the 92 PDNAS items were factor analyzed using common factor analysis (Mulaik, 1972) which employs squared multiple correlations as communality estimates. The extraction program was PA2 of the SPSS factor analysis package (Nie, Hull, Jenkins, Steinbrenner, and Brent, 1975). The factor solution was rotated to achieve an oblique simple structure factor pattern. Based on the Scree Test (Cattell, 1966) fourteen factors were retained. The PDNAS factor loadings for the 92 institutional research activities are presented in Table 2.

As indicated in the table, the fourteen factors appeared to measure: (1) Environmental Analysis; (2) Analysis of Student Outcomes/Characteristics; (3) Involvement in Planning Processes; (4) Alumni Studies; (5) Evaluation of Personnel/Program Development; (6) Enrollment Planning; (7) Financial Analysis; (8) Analysis of Program Demands; (9) Departmental Review/Accreditation; (10) Faculty Welfare; (11) Analysis of Facilities Needs/Utilization; (12) Analysis of Student Satisfaction/Perceptions; (13) Institutional Self-Study; and (14) Faculty Employment Policies.

Insert Table 2 About Here

For the most part the labels attached to the fourteen factors are self-explanatory. The first PDNAS factor extracted was labeled Environmental Analysis. The items loading on this factor dealt with the relationship between the institution and its environment. This factor accounted for 36% of the explained variance. The second PDNAS factor was labeled Analysis of Student Outcomes/Characteristics. It had 11 items with loadings greater than .30 and accounted for an additional 13% of the explained variance. These items concerned a wide range of student related research activities. The seventh factor, Financial Analysis, also had 11 items with loadings greater than .30. These items dealt with a broad range of cost and financial studies. Factor eight, Analysis of Program Demands, was comprised of several items relating to program development. This factor appears to differ from factor one in its departmental rather than institutional focus. The remaining factors did not overlap with each other to a significant degree and appeared to be readily interpretable.

Discriminant Analyses

In order to determine whether there were significant differences in the activities of the institutional research offices by characteristics of the office and their institution, multivariate (discriminant) analyses were conducted. Multivariate analyses were conducted due to the fact that univariate analyses assume independent relationships between the variables and would distort the true interpretations of group differences (Cohen and Cohen, 1975). By utilizing multivariate analysis, one is able to identify the relative significance of a number of variables which separate the various groups.

Table 2. Factor Loadings of Items on the Professional Development Needs Assessment Survey (PDNAS)

PDNAS Item #	Factor	Factor Loadings
	Environmental Analysis	Factor 1
74	Analyzing current/projected labor markets	-.35
11	Community needs assessment	-.35
70	Evaluating impacts of economics conditions on enrollment	-.29
92	Economic impacts of institution on local community	-.29
	Analysis of Student Outcomes/Characteristics	Factor 2
80	Analyzing student outcomes	.62
81	Follow-up surveys of graduates	.60
77	Analysis of student goals	.58
78	Analyzing college sub-populations	.47
79	Follow-up study of non-returning students	.47
76	Satisfaction with major/institution	.45
68	Prediction of academic success	.44
72	Analyzing student retention/attrition	.42
51	Evaluation of non-traditional learning programs	.34
75	Student perceptions of college environments	.33
48	Analysis of grading trends, policies, grade inflation	.30
67	Utilizing external research services	.27
	Involvement in Planning Processes	Factor 3
5	Implementation of planning processes	.74
6	Evaluation of planning processes	.63
3	Planning strategies and political approaches	.55
4	Development/adaptation of planning models to institutional environments	.54
1	Goal setting	.51
8	Institutional level planning	.48
2	Assessment of goals	.37
20	Integration of academic and budgetary planning	.37
31	Management information systems	.36
10	School and department level planning	.30
32	Data base development/management and control	.28
	Alumni Studies	Factor 4
82	Alumni participation in student recruitment	.82
83	Alumni participation in college activities	.75
84	Alumni contributions and gifts	.61
	Evaluation of Personnel/Program Development	Factor 5
35	Evaluation of department heads	.65
34	Evaluation of central administrators	.46
36	Staff development needs	.44
62	Faculty development programs/procedures	.37
50	Evaluation of remedial and/or special service programs	.33
47	Development of student credit hour projections	.32
49	Student evaluation of instruction	.28
40	School/department program reviews	.20
41	Program discontinuance/retrenchment	.20

PDNAS Item #	Factor	Factor Loadings
	Enrollment Planning	Factor 6
65	Monitoring applicant flow patterns	-.50
73	Analyzing effects of student financial aid on enrollment	-.39
64	Developing projections of applicant pools	-.38
71	Developing student flow models	-.34
29	Financial aid studies	-.33
66	Assessing recruiting practices/strategies	-.30
33	Evaluation of governance/decision making systems	.28
45	Utilization of induced course load matrix	-.27
	Financial Analysis	Factor 7
13	Analyses of revenue and expenditure patterns	-.61
15	Projections of revenues and expenditures	-.60
14	Analysis of resource utilization	-.57
23	Administrative and departmental support costs	-.51
24	Physical plant cost studies	-.50
17	Development of budget formulas	-.45
20	Integration of academic and budgetary planning	-.44
16	Financial models	-.43
18	Funding of peer institutions	-.36
29	Financial aid studies	-.31
19	Reallocation strategies/processes	-.30
22	Higher education price indexes	-.29
25	Energy conservation cost studies	-.27
27	Library/learning resources cost studies	-.22
30	Intercollegiate athletics cost studies	-.19
	Analysis of Program Demands	Factor 8
42	Assessment of curricular needs	.49
26	Salaries/fringe benefits cost studies	-.38
44	Analysis of course/program outcomes	.35
73	Analyzing current/projected labor markets	.32
63	Conducting market research	.30
91	Perception of institutional image	.29
61	Faculty satisfaction, vitality, perceptions of environment	.28
43	Analysis of course selection patterns	.27
52	Utilization of library/instructional resources	.27
	Departmental Review/Accreditation	Factor 9
71	Developing student flow models	-.39
47	Development of student credit hour projections	-.38
89	Fact book development	-.37
39	School/departmental accreditation	.33
88	Meeting external reporting needs	-.20
	Faculty Welfare	Factor 10
54	Salary discrimination studies	.53
55	Analysis of compensation/fringe benefits	.52
90	Inter-institutitonal data exchanges	.38
7	State level planning	.36
53	Evaluation of affirmative action programs	.35
26	Salaries/fringe benefits	.33
37	State level reviews	.32
12	Policy analysis	.20

PDNAS Item #	Factor	Factor Loadings
	Analysis of Facilities Needs/Utilization	Factor 11
28	Space Utilization	.77
85	Reporting of space utilization and inventory data	.73
86	Analysis of space needs/costs	.64
87	Projecting space requirements	.59
46	Course scheduling and planning techniques	.31
60	Faculty workload analyses	.31
	Analysis of Student Satisfaction/Perceptions	Factor 12
76	Satisfaction with major/institution	-.57
75	Student perceptions of college environment	-.50
47	Development of student credit hour projections	.30
69	Developing enrollment projections	.24
	Institutional Self-Study	Factor 13
9	Institutional self-study/accreditation	.42
38	Institutional level self-studies	.34
21	Instructional program/credit hour costs	.34
60	Faculty workload analyses	.33
	Faculty Employment Policies	Factor 14
56	Examination of tenure policies	-.74
58	Developing faculty flow/tenure models	-.69
57	Evaluation of retirement policies	-.67
59	Assessing performance and productivity	-.40

Characteristics of the office and institution for which comparisons were made included: (1) type of institution; (2) the office to whom the institutional research office reports; (3) year in which the institutional research office was established; and (4) FTE size of the institutional research staff. Factor scores derived from the fourteen factor solution were employed as dependent variables and were compared using the Wilks' lambda (Λ) criterion (Tatsuoka, 1978). Significant differences ($p < .01$) in the factor scores were identified in each comparison. Discriminant analyses were then conducted to determine where the differences existed.

The first discriminant analysis examined the differences in the practice of institutional research by four types of institutions -- doctoral granting universities, comprehensive universities, baccalaureate, and two-year institutions. Three significant functions were identified. The standardized discriminant weights for the factor score items are presented in Table 3. As indicated, institutional research offices from doctoral-granting or comprehensive institutions tended to be more involved in analyzing faculty employment policies and conducting faculty welfare studies, departmental reviews/ accreditation and enrollment planning studies, while baccalaureate and two-year institutions tended to be more involved in environmental analysis studies and in analyzing student outcomes and program demands. Approximately 49 percent of the variability (canonical $r = .70$) in the four groups could be explained by this function.

Insert Table 3 About Here

The second function tended to separate the two-year and doctoral-granting institutions from the baccalaureate and comprehensive institutions, while the third function separated the comprehensive institutions from the baccalaureate

Table 3. Discriminant Analysis Results by Type of Institution

Factor	Standardized Discriminant Weights 1	2	3
Environmental Analysis	.46	.36	-.37
Analysis of Student Outcomes/Characteristics	.49	.18	-.25
Involvement in Planning Processes	.01	.11	-.12
Alumni Studies	.06	-.09	.12
Evaluation of Personnel/Program Development	.18	.38	.56
Enrollment Planning	-.33	.01	.34
Financial Analyses	-.11	.04	.05
Analyses of Program Demands	.31	.10	-.29
Departmental Review/Accreditation	-.38	.59	.07
Faculty Welfare	-.39	.32	-.34
Analyses of Facility Needs/Utilization	.23	-.23	.52
Analyses of Student Satisfaction/Perceptions	.03	-.65	-.15
Institutional Self-Studies	.12	-.02	.14
Faculty Employment Policies	-.46	-.19	-.21
Type of Institution	Group Centroids		
Doctoral	-1.19	.36	-.19
Comprehensive	-.19	-.21	.54
Baccalaureate	.34	-.83	-.32
Two-Year	1.41	.53	-.06
Canonical Correlation	.70	.46	.31

and doctoral-granting institutions. The analyses of student satisfaction/perceptions, departmental reviews/accreditation, evaluation of personnel/program development, environmental analysis, faculty welfare, enrollment planning and the facility needs/utilization factors were the most important variables in separating the types of institutions.

The second discriminant analysis investigated whether there were differences in the activities for those offices which reported to either the President, Vice President for Academic Affairs, or the Vice President for Administration/Planning/and/or Policy Analysis. The standardized discriminant weights for the only significant function are presented in Table 4. Here, offices which reported directly to the President tended to be involved in institutional self-studies, alumni studies, and environmental analysis. In contrast, offices which reported to the Vice President for Academic Affairs appeared to be more involved in planning processes and enrollment planning studies.

Insert Table 4 About Here

The third analysis investigated whether there were differences in the institutional research activities by the number of FTE professional staff in the offices of institutional research. Groups were defined as those with: (1) one or fewer FTE staff; (2) 1.01 to 3.0 FTE staff; and (3) greater than 3.0 FTE professional staff. The standardized discriminant weights for the two significant functions are presented in Table 5. The first function suggests that offices with a larger staff tend to concentrate on activities dealing with departmental reviews/accreditation, financial analysis studies, and faculty employment policies and to a lesser extent with faculty welfare issues in comparison to smaller institutional research offices.

Table 4. Discriminant Analysis Results by Office to Which Institutional Research Offices Report

Factor	Standardized Discriminant Weights
Environmental Analysis	-.48
Analysis of Student Outcomes/Characteristics	-.11
Involvement in Planning Processes	.52
Alumni Studies	-.40
Evaluation of Personnel/Program Development	.21
Enrollment Planning	.33
Financial Analyses	-.04
Analyses of Program Demands	.14
Departmental Review/Accreditation	.06
Faculty Welfare	.11
Analyses of Facility Needs/Utilization	.08
Analyses of Student Satisfaction/Perceptions	-.26
Institutional Self-Studies	-.62
Faculty Employment Policies	.30
Office Reports To	**Group Centroids**
President	-.55
Vice President for Administration/Planning/Policy Analysis	.05
Vice President for Academic Affairs	.52
Canonical Correlation	.41

Table 5. Discriminant Analysis Results by Numbers of FTE Professional Staff in Institutional Research Office

Factor	Standardized Discriminant Weights 1	2
Environmental Analysis	.10	-.48
Analysis of Student Outcomes/Characteristics	-.05	-.14
Involvement in Planning Processes	.24	-.35
Alumni Studies	.04	.17
Evaluation of Personnel/Program Development	-.06	.24
Enrollment Planning	.12	-.49
Financial Analyses	-.38	.04
Analyses of Program Demands	.27	.01
Departmental Review/Accreditation	-.50	.16
Faculty Welfare	-.35	-.13
Analyses of Facility Needs/Utilization	.16	.31
Analyses of Student Satisfaction/Perceptions	.26	-.05
Institutional Self-Studies	-.01	.30
Faculty Employment Policies	-.28	-.24
FTE Professional Staff Size	Group Centroids	
1.00 or Less	+.58	-.13
1.01 - 2.99	-.24	.40
3.00 +	-.66	-.45
Canonical Correlation	.45	.32

Insert Table 5 About Here

The second function separated medium sized offices with 1.01 to 3.0 FTE professional staff from those with smaller and larger office staffs. The medium sized offices appeared to be more involved in enrollment planning studies, environmental analysis, analyzing facility needs/utilization, and conducting institutional self-studies. They also tended to be less involved in planning processes.

The last discriminant analysis attempted to determine whether there were differences in the institutional research activities by the year in which the office was established. For this analysis, four groups were constructed: (1) institutional research offices which were established prior to 1968; (2) offices established between 1968 and 1971; (3) offices established between 1972 and 1975; and (4) offices established since 1976. Table 6 presents the standardized discriminant weights for the only significant function. This function appeared to separate the older institutional research offices from those more recently established. In particular, the older offices seemed to be more involved in faculty welfare studies, while more recently established offices tended to concentrate their attention on analyzing program demands, student satisfaction/perception studies, environmental analysis studies, and alumni studies.

Insert Table 6 About Here

DISCUSSION

Limitations

It is important to note several limitations of the study. These include (1) the comprehensiveness of the survey items; (2) the restricted two year

Table 6. Discriminant Analysis Results by Year Institutional Research Office was Established

Factor	Standardized Discriminant Weights
Environmental Analysis	.30
Analysis of Student Outcomes/Characteristics	-.08
Involvement in Planning Processes	.16
Alumni Studies	.29
Evaluation of Personnel/Program Development	.22
Enrollment Planning	-.04
Financial Analyses	-.01
Analyses of Program Demands	.49
Departmental Review/Accreditation	.13
Faculty Welfare	-.41
Analyses of Facility Needs/Utilization	-.18
Analyses of Student Satisfaction/Perceptions	.33
Institutional Self-Studies	-.14
Faculty Employment Policies	-.22
Year Office Established	**Group Centroids**
Prior to 1968	-.62
1968 - 1971	-.39
1972 - 1975	.34
1976 - 1981	.63
Canonical Correlation	.46

time period for which respondents were asked to indicate whether they were involved in a particular activity; (3) lack of knowledge in terms of an office's degree of involvement in an activity area; (4) the primary use of factor scores in the analysis which tend to indicate the relative as opposed to absolute extent to which various types of institutional research offices engage in particular activities; and (5) the relatively low PDNAS response rate due, in part, to the length of the survey.

Another significant limitation of the study is the lack of information concerning how the functional responsibilities of offices are distributed within an institution. One might speculate that in larger institutions "typical" institutional research functions are fragmented, with several offices on campus conducting studies which might, in other settings, be conducted by an office of institutional research. Thus, it is important to note that this study does not assess the total range of institutional research activities within an institution. It assesses only what is being done within offices which are formally titled offices of institutional research, institutional studies, or institutional analysis.

Validation of PDNAS Taxonomy

Discussion of the validation of the PDNAS taxonomy of institutional research activities centers upon Table 7 which notes the comparison of (1) areas of institutional research emphases as defined by Tincher (1970) and Morstain and Smart (1974); (2) the a priori PDNAS taxonomy categories of institutional research activity; and (3) the factors which emerged from the PDNAS fourteen factor solution.

Insert Table 7 About Here

Table 7. Comparison of Areas of Institutional Research Emphases, A Priori Professional Development Needs Assessment Survey (PDNAS) Categories, and PDNAS Fourteen Factor Solution

Areas of Institutional Research Emphases (Tincher, 1970; Morstain and Smart, 1974)	A Priori PDNAS Taxonomy Categories and PDNAS Item Numbers	PDNAS Fourteen Factor Solution
Studies of Students	Student Concerns and Perceptions (75-80)	Student Outcomes/ Characteristics
		Student Satisfaction/ Perceptions
Planning and Coordination	Planning (3-12) Goals (1-2)	Involvement in Planning Processes
Space Utilization	Facilities (85-87)	Analysis of Facilities Needs/Utilization
Faculty Studies	Faculty (53-62)	Faculty Welfare Faculty Employment Policies
Curriculum	Curriculum and Instruction (42-52)	Analysis of Program Demands
	Academic Program Planning/ Analysis/Review (37-41)	Departmental Review/ Accreditation
Budget and Finances	Budget and Financial Analyses (13-30)	Financial Analyses
Organizational Studies	Organizational/Administrative Development (33-36)	Evaluation of Personnel/ Program Development
Data Systems and Computers	Computers (31-32)	---
Teaching	---	---
Other	Admissions/Enrollment Planning (63-74)	Enrollment Planning
	Alumni (81-84)	Alumni Studies
	External Relations (88-92)	---
	---	Institutional Self-Study
	---	Environmental Analysis

Similarities between the areas of research (column 1) and the a priori PDNAS taxonomy of institutional research categories (column 2) of Table 7 would tend to validate the areas of research emphases, while similarities between column 2 and the fourteen factor solution (column 3) would support validation of the PDNAS taxonomy. A problem in comparing the areas of research noted by Tincher and by Morstain and Smart in column 1 to columns 2 or 3 is that the areas of research made no reference to specific item content. Thus, their survey respondents had no specific referent and might interpret the areas of research emphasis in quite different manners.

The item numbers from the PDNAS taxonomy noted in Column 2 of Table 7 correspond with the numbers of the items employed in the factor analysis in Table 2. Thus, an examination of Table 7 and Table 2 would indicate how the a priori grouping of 92 PDNAS items compared with the grouping of individual items which emerged from the fourteen factor solution. Particular care must be taken in interpreting Table 7 as it is possible for the a priori PDNAS categories and the factors from the fourteen factor solution to have similar labels although there may be substantial differences in the items which define the respective categories/factors.

Table 7 notes relatively direct correspondence between the areas of research emphases, categories, and factors dealing with studies of students, planning and coordination, space utilization, and budget and finances. Close, if not exact, correspondence between the three columns in Table 7 was also noted in the faculty studies area of research emphasis.

It appeared that the items related to the PDNAS taxonomy category of Academic Program Planning/Analysis/Review and the items comprising the Departmental Review/Accreditation factor were less similar than the labels implied. In this regard, it seemed that the PDNAS taxonomy category merely identified

different levels of state, institutional, school, or departmental academic program reviews. However, as noted in Table 2, Departmental Review/ Accreditation was operationally defined by the individual items relating to the development of student flow models, student credit hour projections, and school or departmental fact books.

The area of research emphasis entitled Data Systems and Computers was incorporated in the PDNAS under the a priori category heading of Computers. Several items in this category were eliminated from the factor analyses because they appeared to represent methods or tools of analyses as opposed to topics of study investigated by institutional researchers. The two remaining items in this category loaded on the Involvement in Planning Processes factor. Thus, as noted in Table 7, a factor related to data systems and computers did not emerge from the PDNAS fourteen factor solution, perhaps due to the lack of items measuring this area. Similarly, the teaching area of research emphasis was not reflected in the PDNAS taxonomy or the fourteen factor solution.

Changes in the focus of institutional research emphases from the period of the early 1970s are evident when one compares Tincher's and Morstain and Smart's Other category of research emphasis with the a priori PDNAS categories and the PDNAS fourteen factor solution. The fact that some areas of study emerged as important categories of activity in the PDNAS which were not included in the earlier studies suggests that the practice of institutional research is evolving to include new emphases. This would appear to account, for example, for the inclusion of the admissions/enrollment planning and alumni categories in the PDNAS. These categories of activity also emerged from the fourteen factor solution where they were labeled Enrollment Planning and Alumni Studies.

As indicated by the last line of Table 7, it is important to note that neither the Tincher, Morstain and Smart studies nor the PDNAS a priori

categories identified the Environmental Analysis factor which was the first factor to emerge from the fourteen factor solution. The items which comprise this factor appear to be closely related to various aspects of environmental analysis noted by Kotler and Murphy (1981), including the assessment of an institution's market environment, public environment, competitive environment, and macroenvironment. As defined by Kotler and Murphy (p. 472), environmental analysis is the first step in the strategic planning process intended to develop and maintain a strategic fit between an organization and its changing marketplaces. The factor also appears to be closely related to what Peterson (1979, 1980) has referred to as environmental assessment or environmental scanning.

Whether the PDNAS fourteen factor solution reflects only current practice and has limited utility in forecasting future areas of institutional research involvement is uncertain. In this regard, Peterson (1979) identified institutional planning, program evaluation, reduction/closure, concern for quality, and faculty and staff vitality as five institutional problems, reflecting trends of the 1980s, which will influence institutional research in the future. These areas of concern emerged in the PDNAS factor solution as Involvement in Planning Processes, Analysis of Program Demands, Evaluation of Personnel/Program Development, Departmental Review Accreditation, and Faculty Welfare.

Discriminant Analyses

If one accepts the maxim that "institutional research is what institutional researchers do", one might expect that the practice of institutional research would vary according to type of institution, offices to which institutional research reports, size of professional staff, and/or the time period in which offices of institutional research were established. Indeed, the discriminant analyses employed in this study have demonstrated significant variations in the type of studies conducted by institutional research offices differing in the above institutional and organizational characteristics.

A summary of these significant differences, as identified by the discriminant analyses, is shown in Table 8. The table presents an interpretation of the factor score means for those items which had standardized discriminant weights of approximately .30 or greater in the respective discriminant analyses. Several patterns of activity may be noted.

Insert Table 8 About Here

First, in comparison to their counterparts, long-established institutional research offices with relatively large professional staffs located in graduate degree granting institutions appear to have been more involved in recent years in studies of faculty welfare, faculty employment policies, departmental reviews/accreditation, and enrollment planning activities. On the other hand, smaller and more recently established institutional research offices in non graduate degree granting institutions have tended to concentrate their activities on environmental analysis studies and analyzing program demands. Institutional research offices from community colleges were also found to be more involved in analyzing student outcomes/characteristics than offices from other types of institutions. This was consistent with results obtained by Morstain and Smart (1974).

Institutional research offices from comprehensive institutions with average size professional staff tended to devote more of their attention to evaluating personnel/program development activities, analyzing facility needs/utilization, and conducting institutional self-studies than other offices. The last major pattern worthy of note relates to differences in the activities of institutional research offices as a function of organizational reporting relationships. Here, it appeared that offices reporting to Presidents and Chancellors were more

Table 8. Activities of Institutional Research Offices as Practiced in Various Institutional and Organizational Settings

Factor	Type of Institution				Who IR Reports To*			FTE Prof. Staff Size			Year Established			
	Doc.	Comp.	Bac.	2-Year	Pres.	VPAPPA	VPAA	1 or < 1	1-3	> 3	< 1968	1968-1971	1972-1975	1976-19+
1. Environmental Analysis	No	No	-	Yes	Yes	-	No	Yes	No	-	No	No	-	Yes
2. Analysis of Student Outcomes/ Characteristics	No	-	-	Yes	-	-	-	-	-	-	-	-	-	-
3. Involvement in Planning Processes	-	-	-	-	No	Yes	-	Yes	No	-	-	-	-	-
4. Alumni Studies	-	-	-	-	Yes	-	No	-	-	-	No	-	Yes	Yes
5. Evaluation of Personnel/ Program Development	No	Yes	No	Yes	-	-	-	-	-	-	-	-	-	-
6. Enrollment Planning	Yes	Yes	No	No	-	Yes	Yes	-	No	Yes	-	-	-	-
7. Financial Analyses	-	-	-	-	-	-	-	No	Yes	Yes	-	-	-	-
8. Analyses of Program Demands	No	No	-	Yes	-	-	-	-	-	-	No	No	Yes	Yes
9. Departmental Reviews/ Accreditation	Yes	-	No	No	-	-	-	No	-	Yes	-	-	-	-
10. Faculty Welfare	Yes	-	No	No	-	-	-	No	-	Yes	Yes	Yes	No	No
11. Analyses of Facility Needs/ Utilization	No	Yes	No	Yes	-	-	-	No	Yes	-	-	-	-	-
12. Analyses of Student Satisfaction/Perceptions	No	-	Yes	No	-	-	-	-	-	-	No	-	Yes	Yes
13. Institutional Self-Studies	-	-	-	-	Yes	-	No	No	Yes	-	-	-	-	-
14. Faculty Employment Policies	Yes	-	-	No	-	No	Yes	No	-	Yes	-	-	-	-

NOTES: 1. Yes means the factor tended to be a major activity.

2. No means the factor tended not to be a major activity.

3. Blank means there was no clear indication of whether or not the factor tended to be a major activity.

* Pres.=President; VPAPPA=Vice President for Administration/Planning/Policy Analysis; VPAA=Vice President for Academic Affairs

involved in environmental analysis studies, alumni studies and institutional self-studies. Those reporting to Vice Presidents for Administration, Planning, or Policy Analysis were, as the title suggests, heavily involved in planning processes and enrollment planning. Finally, it was apparent that offices reporting to Vice Presidents for Academic Affairs tended to concentrate their attention on enrollment planning and the examination of faculty employment policies.

These results may be interpreted as indicating that the activities of the institutional research office are a function of the type of institution in which they are working, the size of the professional staff in the office, the period in which the office was established, and who the office reports to. The results further suggest that the activities may be a function of the diversity and level of sophistication of the research staff. In this regard, one notes that the activities of large institutional research offices are those which tend to employ the more sophisticated models or techniques of analysis. To employ such techniques may require the addition of personnel with differentiated areas of specialization as well as a commitment to the continuing professional development and training of existing staff.

IMPLICATIONS

1. Although the functions of institutional research are performed by virtually all institutions of higher education, by 1969 an estimated 23% of the nation's colleges and universities had formally established Offices of Institutional Research (Pieper, 1971). By 1979, the percentage increased only slightly to 25% (Petersen and Davis, 1980). As more offices of institutional research are established in the future, it is likely that institutional and organizational characteristics will continue to play a major role in defining the practice of institutional research. The findings from this study may help institutions

considering the establishment of such offices to anticipate the likely areas of research emphases associated with decisions on staffing levels and organiational structure for institutional research. If past trends continue, one might expect the establishment of many more one person institutional research offices in community colleges which report directly to the President.

2. Institutional research emphases will continue to evolve in response to changing technology, increased administrative sophistication and staff analytic support capability, changes in state level coordinating boards, legislative and executive office influences as well as changes in institutional governance structures. Greater emphasis is likely to be placed upon strategic planning and financial analyses. Whether the institutional research function and institutional research offices will become more centralized or dispersed throughout an institution remains speculative.

3. This study has examined areas of institutional research activity over the preceeding two year period. If one assumes that the nature of institutional research is to conduct studies in particular areas and move on to other areas of study, the two year period of investigation may create a snapshot as opposed to a cumulative portrait of institutional research activities. Whether there is a logical and predictable pattern of areas of institutional research involvement over a period of years is a topic for future research. Differences in institutional research emphases by various institutional organizational characteristics may also reflect different thresholds of awareness and time periods in which particular topics become the focus of institutional research activity. For example, space utilization studies were an activity of low priority for community colleges at the time of the Morstain and Smart study. However, the present study found the analysis of facilities utilization to be a major community college activity. This may reflect the end of the period of rapid physical plant growth for such colleges resulting in increased state

level pressures for accountability and the need for more sophisticated analyses of available space.

4. The extent to which organizational reporting relationships, size of professional institutional research staff, institutional type and the time period in which an institutional research office was established dictate the practice of institutional research needs further assessment. We need to understand, for example, the constraints associated with the operations of one-person offices. One may speculate on the effectiveness of the single institutional researcher with a limited analytical background who may be expected to participate in a large number of diverse activities. Whether involvement equates with influence in such instances is questionable. Given the demands upon the "one person shop", it is easy to see how such offices may suffer from the "mile wide and an inch deep" syndrome.

5. Different patterns of activity suggest the need for different areas of expertise among existing institutional research staff and the need to develop requisite skills in order to engage in different types of analytical activities. Once needed skills are identified, appropriate pre-service and in-service training mechanisms need to be developed. As approximately one-fourth of the PDNAS respondents indicated their highest earned degree was in the area of higher education, it would appear that higher education degree programs and institutes could provide both pre-service and in-service training for institutional researchers.

6. Further development of taxonomies of institutional research involvement should be based upon examinations of the factor structures of institutional research activities within specific types of institutions.

The practice of institutional research has varied greatly from its earlier stages of development in the 1950s to the more current emphasis upon

model development, management information systems,or the integration of academic and budgetary planning symptomatic of what Peterson has termed "management fever". As such, the practice of institutional research is perhaps best defined by an assessment of what institutional researchers actually do. In this sense, the factors which have emerged from the PDNAS constitute a current operational definition of institutional research.

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